Claims:

56. (Presently Amended) A method for processing a semiconductor article ~~wafer, data disk, or semiconductor substrate and similar article requiring very low contaminant levels~~ comprising the steps of:

moving a sealed container, holding at least one article in a horizontal orientation, to an interface part of a processing system;

unsealing the container by removing a panel of the container, to provide access to the article in the container;

engaging the article with an engagement head;

pivoting the engagement head to move the article from a horizontal orientation into a vertical orientation;

releasing the article from the engagement head;

placing the article on a shelf with the article in a vertical orientation;

lifting the article off of the shelf with a transfer robot;

carrying the article on the robot to a process chamber;

opening the process chamber;

moving the article into the process chamber;

closing the process chamber; and

processing the article in the process chamber.

57. (Previously added) The method of claim 56 where the interface port is part of a processing system within an enclosure.

62. (Previously added) The method of claim 56 wherein removing the panel of the container places the interior of the container in fluid communication with the workspace within the enclosure.

64. (Previously added) The method of claim 56 wherein the engagement head is pivoted upwardly to move the article from the horizontal to vertical orientation.

65. (Presently Amended) A method for processing a semiconductor article ~~wafer, data disk, or semiconductor substrate and similar articles requiring very low contaminant levels~~, comprising the steps of:

moving a sealed container holding at least one article in a horizontal orientation, to an interface port of a processing system;

unsealing the container, to provide access to the article in the container;

engaging the article with an engagement head by moving the engagement head in a first direction;

pivoting the engagement head, to move the article from a horizontal orientation into a vertical orientation;

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releasing the article from the engagement head and placing the article on a shelf with the article in a vertical orientation;

lifting the article off of the shelf with a transfer robot;

carrying the article on the transfer robot to a process chamber by moving the transfer robot in a second direction, perpendicular to the first direction;

opening the process chamber;

placing the article into the process chamber;

closing the process chamber; and

processing the article in the process chamber.

66. (New) A method for processing one or more semiconductor wafers in an enclosed working space of a processing system, comprising the steps of:

(a) providing the wafers to the processing system with the wafers within a sealed container, and with the wafers in a horizontal orientation;

(b) placing the sealed container on a shelf at a docking station of the processing system;

(c) opening the container at the docking station causing the interior of the container to be in fluid communication with the working space of the processing system, by moving a panel member away from the container;

(d) pivoting the wafers from the horizontal orientation into a near vertical orientation;

(e) moving the wafers linearly to a process chamber;

(f) placing the wafers into the process chamber, with the wafers in a near vertical orientation in the process chamber;

(g) closing the process chamber;

(h) spinning the wafers in the process chamber; and

(i) spraying the spinning wafers with a process liquid.

67. (New) The method of claim 66 further including the step of holding the wafers in a carrier while spinning the wafers in the process chamber.

68. (New) The method of claim 67 wherein the carrier has side walls including receiving receptacles and with the wafers supported in the receiving receptacles.

69. (New) A method for processing a semiconductor article, comprising the steps of:

moving a sealed container, holding one or more articles in a horizontal orientation, to an interface port of a processing system;

unsealing the container to provide access to the articles in the container;

pivoting the articles from the horizontal orientation into a vertical orientation, with the articles supported in a carrier;

moving the articles in the carrier into a process chamber;

spinning the articles in the carrier in the process chamber;

spraying a process liquid towards the spinning carrier supporting the articles;

withdrawing the articles in the carrier from the process chamber;

pivoting the articles back into the horizontal orientation;

placing the articles back into a container;

sealing the container; and

removing the container from the interface port.

70. (New) A method for processing one or more semiconductor articles comprising the steps of:

providing the articles in a horizontal orientation in a container;

removing the articles from the container and pivoting the articles from a horizontal orientation into a vertical orientation;

placing the articles on a carriage ;

moving the carriage linearly with the articles remaining in the vertical orientation, to place the articles into a process chamber:

spinning the articles in the process chamber; and

applying a process liquid onto the spinning articles, to process the articles.

71. (New) The method of claim 70 wherein the articles are placed into a carrier on the carriage, with the carrier adapted for spinning within the process chamber.

72. (New) The method of claim 70 further comprising the step of removing the articles from the process chamber, placing the articles into a second process chamber, further processing the articles in the second process chamber, and then returning the articles to a container.

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